National and International Perspectives on Mobility and Transportation Policy

Roger R. Stough
NOVA Endowed Chair and Professor of Public Policy
George Mason University
rstough@gmu.edu

Broad Societal Goals

- Safe, secure, social, cultural and material sufficient life style
- Achieve through
  - Economic growth
  - Economic development
  - Social development
  - Education
  - Cultural development
  - Political development and leadership

Indicators

- Material wealth
- Education attainment
- Equity achieved
- Security provided
- Leisure time
- Mobility
- Accessibility
- And so on

Transportation Policy

- Enhance quality of life or social and material existence
- Base indicators: mobility and accessibility
- Constrained optimization
  - safety, security, congestion, finance….
- Opportunity cost – trade-offs

Mobility and Accessibility

- Mobility
  - Ability to move around or about
  - Ability to move anywhere
- Accessibility
  - Ability to reach specific locations
  - Ability to link to specific destinations/origins

Economic Growth and Development

- Stage theory dominates, e.g., Rostow's Stage Theory of economic development
- Some possible exceptions
  - Leap Frog Hypothesis – India
  - Big Bang Theory – Ascension countries
- Important to understand how mobility and accessibility goals play out in a development framework

Mobility and Accessibility [contd.]

- The stages of economic development
  - Accessibility relatively more important in early stages
    - Opening unconnected areas
    - Need to establish basic links to the outside

Mobility and Accessibility [contd.]

- Stages of economic development [contd.]
  - Need for mobility enhancement increases with development
    - Base transport network infrastructure developed
    - Congestion creates time cost problems

Accessibility Enhancing Examples

- Developing Countries or Regions
  - Ghana – Rail Development
  - China – Beijing-Jianan-Qingdao Expressway
  - China-Taiwan – Fugian Coast Linkage
  - I-64 [Virginia-West Virginia-Kentucky]
  - India – Golden Quadrilateral
  - India-China Airport Development
  - Saudi Arabia – Amman-Medina-Mecca RR
  - Shanghai Expressways link to hinterland
  - Kinmen (Chinmen or Quemoy) Island

Ghana

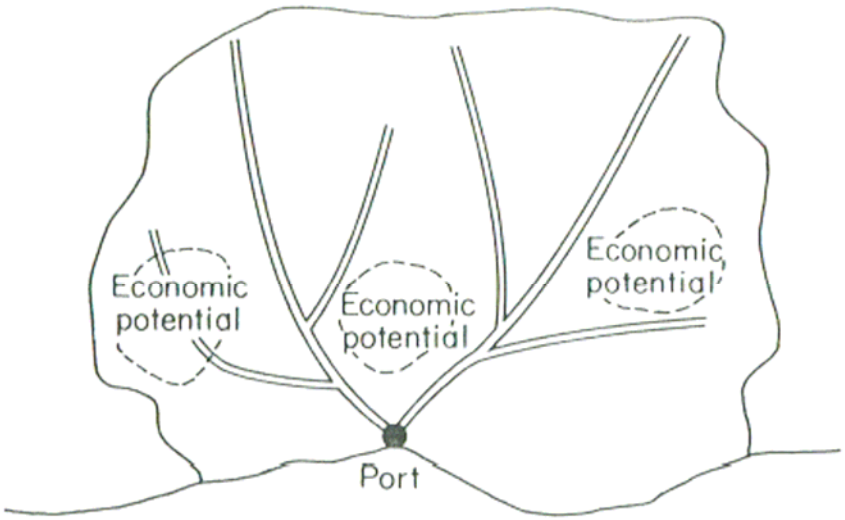


FIGURE 13–13

Road penetration lines searching space in the early years of development.

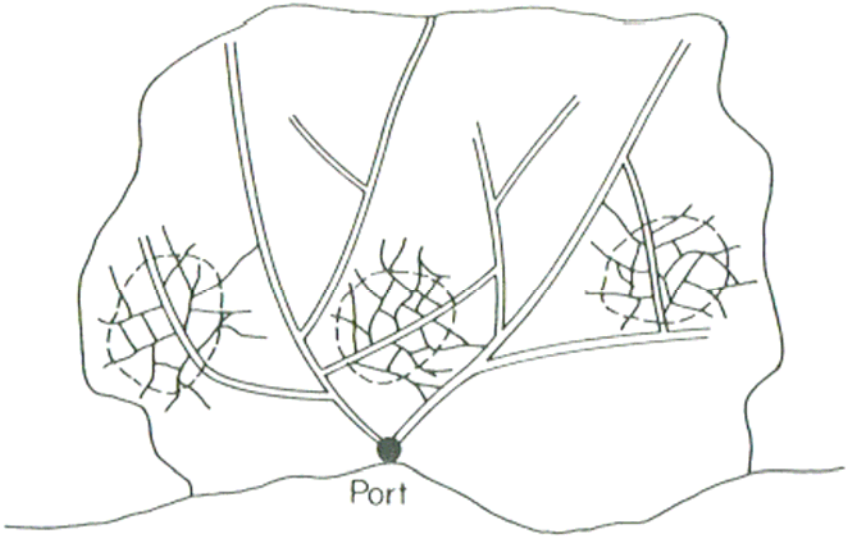
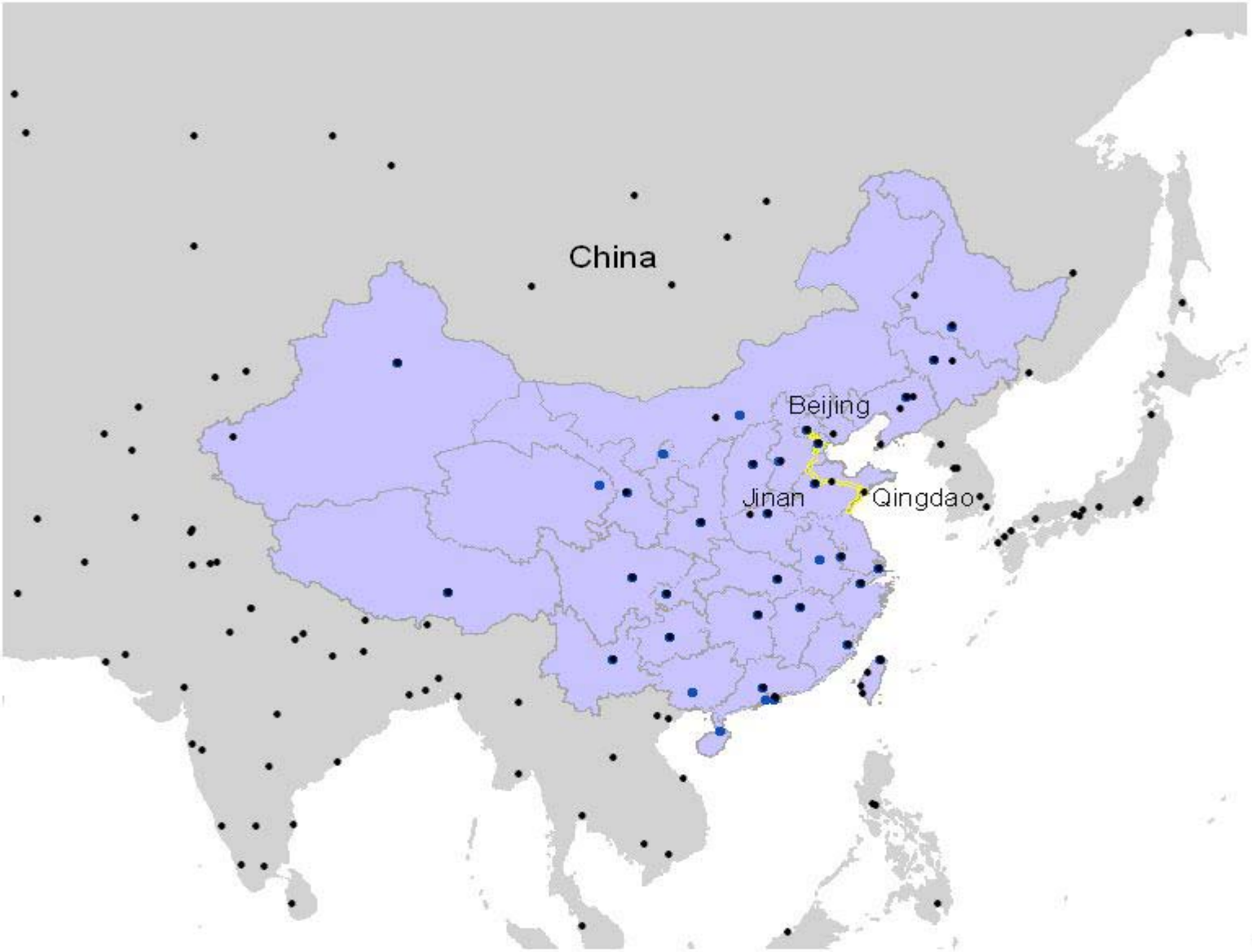


FIGURE 13–14

Feeder roads exploding to drain areas of economic potential discovered by labyrinthian search at an earlier time.

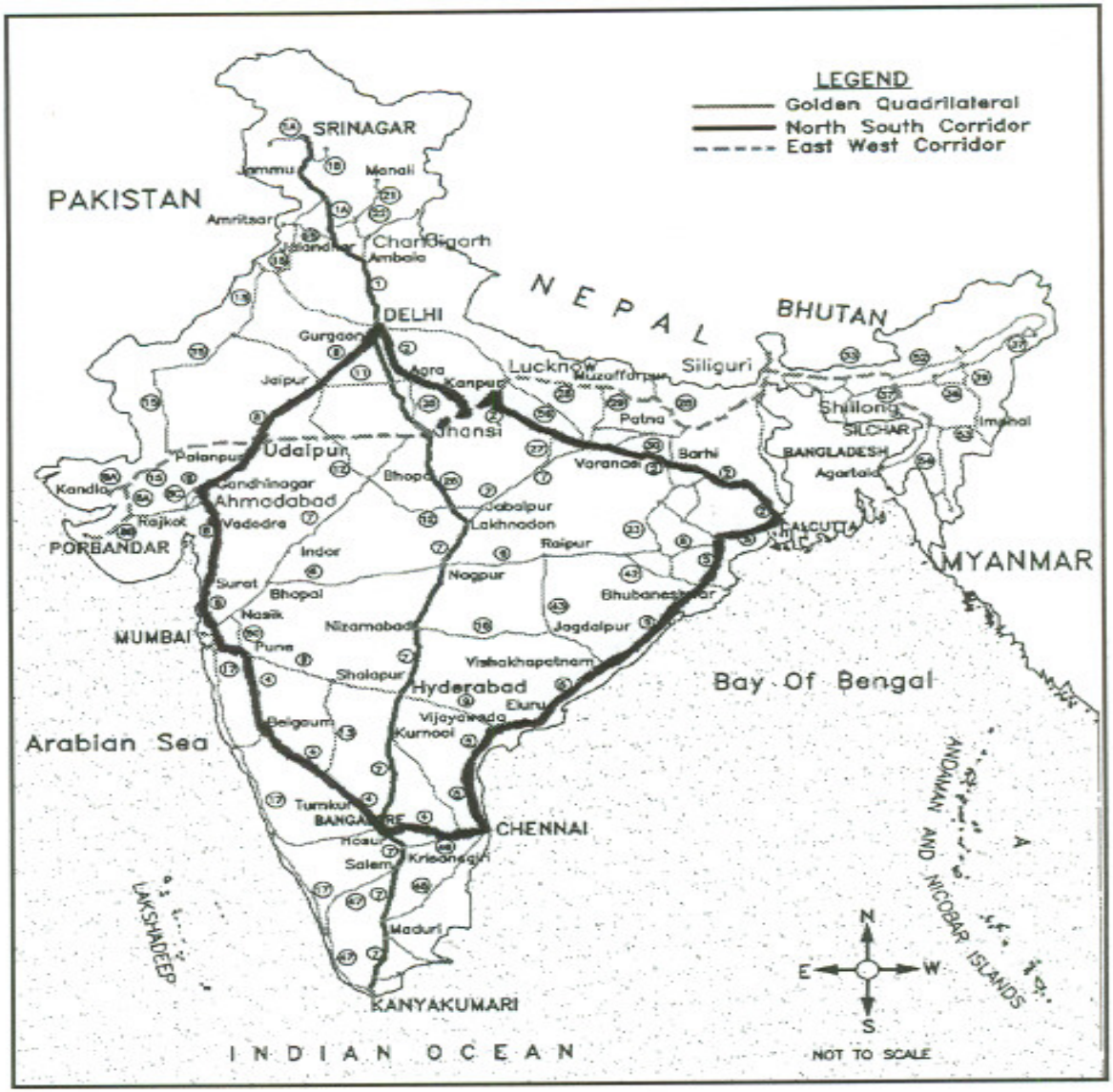
Abler, R., Adams, J.S. & Gould, P.S. (1971). *Spatial Organization: the Geographer's View of the World*. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

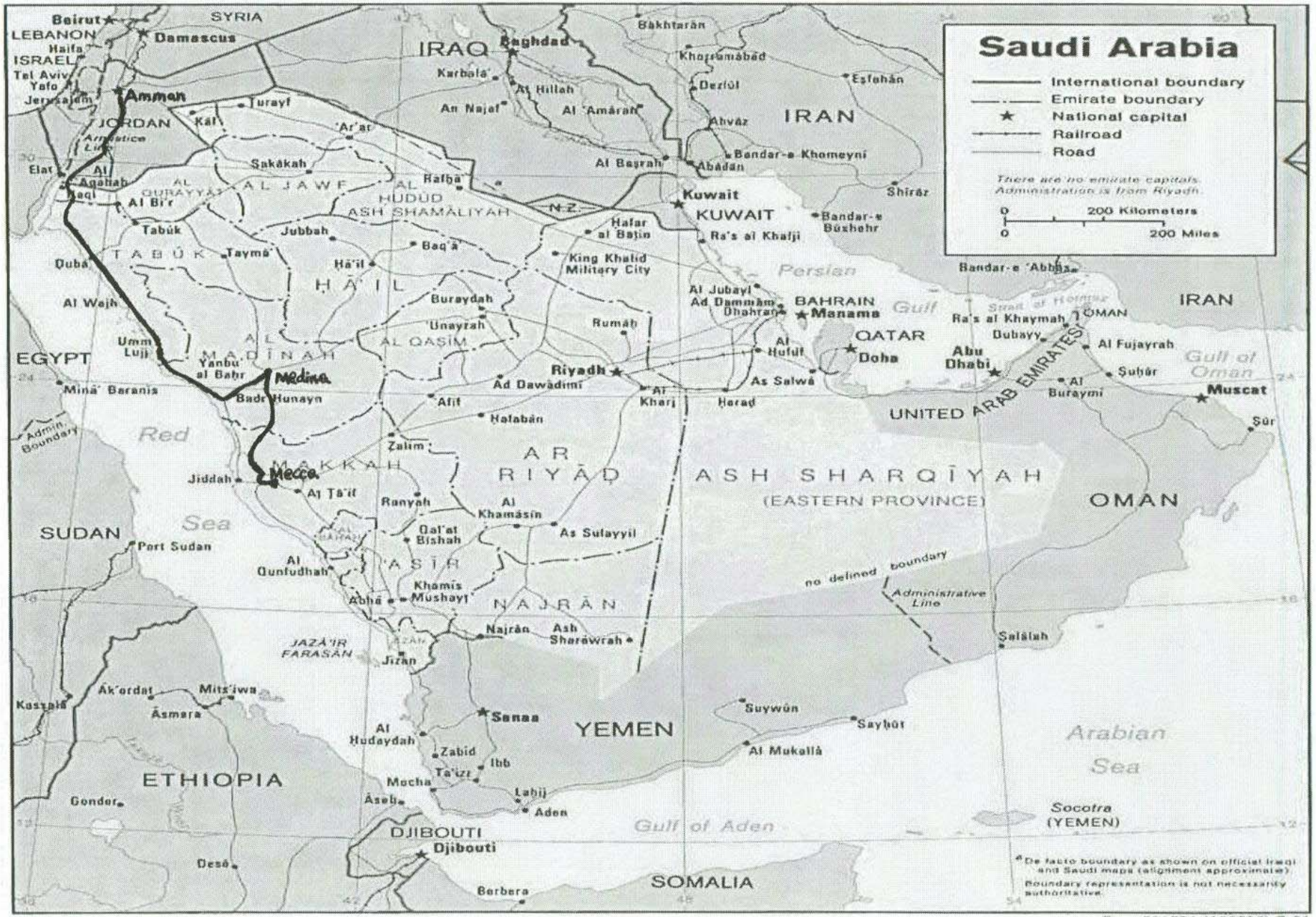
Expressways (Beijing - Jinan - Qingdao)



Port Cities in Fujian Province

NATIONAL INTEGRATED HIGHWAYS DEVELOPMENT PROJECT





Base 801701 (A05798) 3-91


118°
120°
122°
26°
24°
22°
Tungyin Tao
Liang Tao
Peikant'and Tao
Matsu Tao
Paich'üan Liehtao
East China Sea
Min R.
Ta-chang Hsi R.
China
P'engchia Yü
Tanshui
Chilung
Yangmingshan
Taipei
T'aoyüan
Tao-shui Ho R.
Hsinchu
Ilan
Wuch'iu Hsü
Formosa Strait
Miaoli
Cho-shui Hsi R.
Suao
Quemoy
Chinmen
Cho-shui Hsi R.
Fengyüan
T'aichung
Changhua
Chunghsinghsints'un
Hualien
Nant'ou
Pescadore Islands
Touliu
P'enghu Shuitao R.
Fenglin
Makung
Chia-i
Taiwan
Pacific Ocean
Hsin-ying
Kuanshan
T'ai-nan
Kao-p'ing Hsi R.
T'aitung
Kaohsiung
P'ingtung
Fengshan
Lü Tao
Fangliao
Liuch'lu Yü
Lü Yü
Hengch'un
N
0
75 km
0
50 mi
©1997 MAGELLAN Geographix℠
(805) 685-3100 www.maps.com

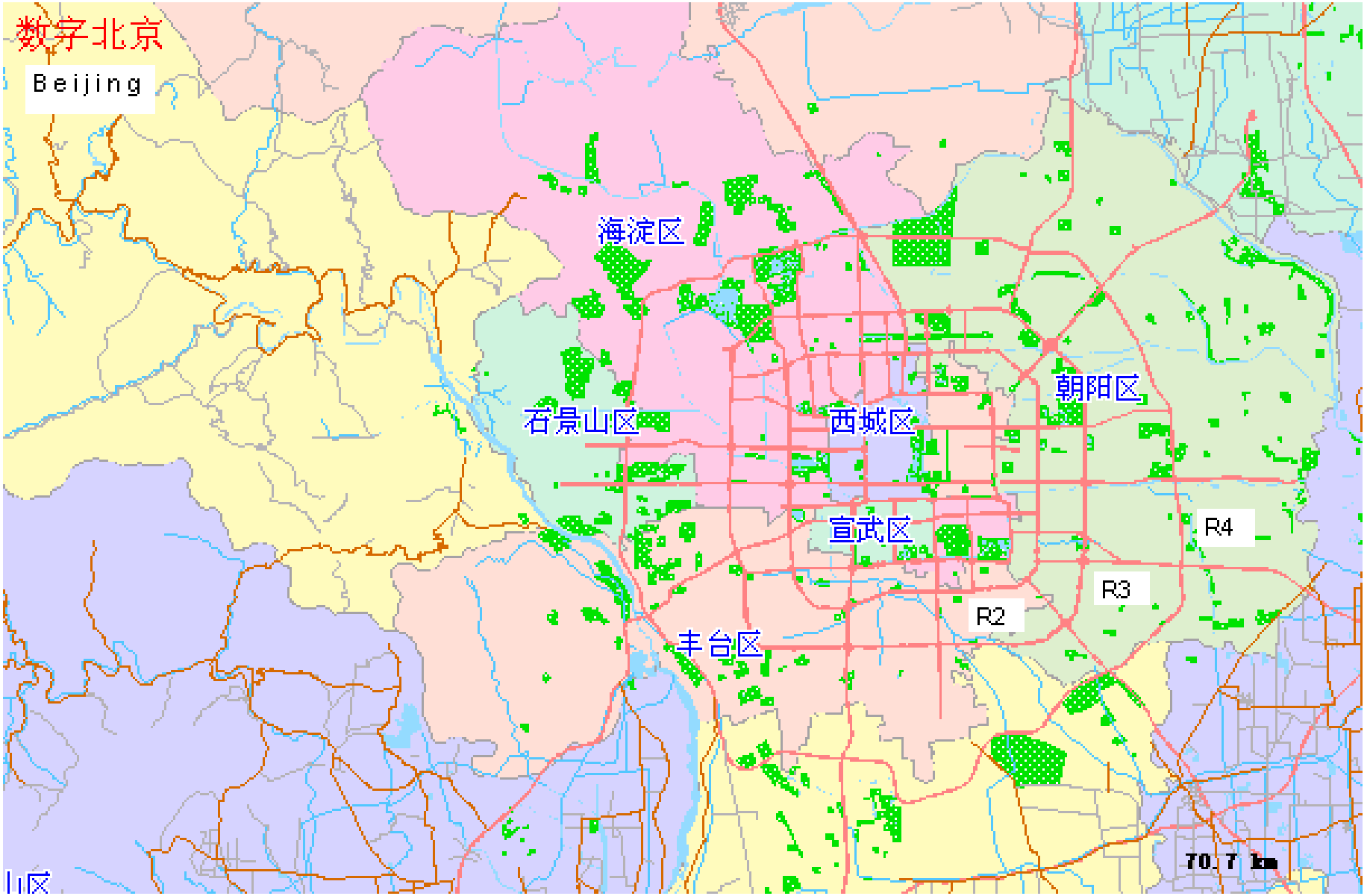
Enhancing Mobility

- Construct/Build
- Management approach
  - Economic tools (pricing, privatization)
  - Telework
  - Flex hours
  - ITS
  - Incident management
  - HOV
  - Hybrid vehicles

Mobility Enhancement Examples

- Road pricing
- ITS – congestion management - Europe
- ITS – in vehicle way finding
- Ring roads in Beijing
- Delhi – environmental quality and mobility
- Delhi, Kolkata & Mumbai – Slurry example
- Intermodality – Europe-Japan

Beijing Ring Roads



India Traffic Slurry

Maglev in Shanghai

Two Planning and Management Approaches: Traditional and Emergent

- A. Traditional – Demand Driven
  - Population, land-use and transport networks mapped and forecast
  - Compare to existing network(s)
  - Determine capacity expansion needs
  - Create implementation plan; make decisions
  - Execute

Two Planning and Management Approaches [Contd.]

- B. Emergent – Real Time Intervention & Management - Influencing demand
  - Vision of perfect information
  - Possibility of continuous intervention
  - How look at whole and specific parts at the same time – Spin Glass Modeling Example
  - Examples: VMS, ATIS
  - Boolean Gates Model

Institutions

- Social rule systems
- Kinds of institutions
  - Informal
  - Formal
  - Governance
  - Operational
- European – U.S. Contrasts

Institutional Issues

- MPOs and ROOs: organizations for achieving the “Institution” of transportation and traffic management
  - Traditional model applies to the MPO process
  - ROO: operational and management focus
- Also true in aviation – Central American countries have an org. for safety and secutity

Institutional Issues

- Coordination and Cooperation
  - Increasingly important because of:
    - IT
    - Globalization
    - Complexity
    - Diverse and widening range of stakeholders
    - Impact of deregulation

Institutional Issues

- Coordination and Cooperation [contd.]
  - Existing and emergent organizations
    - Legal network entities
      - ICAO
      - Int. Maritime Organization
      - NAFTA
      - EU
      - APEC

Institutional Issues

- Coordination and Cooperation [contd.]
  - Existent and emergent organizations [contd.]
    - Informal Networks
      - STELLA/STAR
      - World Conference on Transportation Research
      - Air Transport Research Society
      - ITS
      - Great opportunity and need for international road network organizaton

Some Concluding Thoughts

- Accessibility, mobility and development
- Development and sustainability (mobility)
- Constrained optimization
- Transport policy and practice across countries
- Changing transport practice
- Technology and institutions as policy vehicles
- Coordination and Networks
- Education